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Modifications in the Malaise Insect Trap

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Bronze screen funnel replaces plastic, and a metal frame replaces wood to make the Malaise insect trap more durable and rigid on windswept rangelands.

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Dr. Henry Townes[3] provided plans for the construction of an insect-collecting trap named after Dr. Rene Malaise, and suggested that this trap can be modified and adapted to various habitat types. Reported here are some modifications in the Malaise trap for its use on the windswept sagebrush rangelands of south-central Wyoming.

In Townes' design, the Malaise trap was constructed with a wood frame holding the net and clear plastic for the insect-collecting funnel. During the 1972 summer field season, traps of this design were erected in a sagebrush community at 7,500 feet elevation 15 miles west of Saratoga, Wyoming. During this and subsequent field seasons, strong westerly winds often exceeded 30 miles per hour with occasional gusts to 50 m.p.h. These winds overturned the standard Malaise trap, damaging both nets and frames. Lesser winds also disrupted collecting by jostling the trap which splashed the alcohol from the insect-collecting jars, and by bending and cracking the framework and the clear plastic funnels.

To correct these problems, Townes' original design was modified in two ways. The first modification was to strengthen the funnel section by replacing the clear plastic with a bronze screen funnel topped with a piece of galvanized metal (fig. 1). While this created a somewhat darker funnel area toward which the insects must move to be caught, it is more rigid and durable than plastic and does not seem to have adversely affected the catch.

Figure 1.—Side view of bronze screen funnel.

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[3] *Townes, Henry. 1962. Design for a Malaise trap. Proc. Entomol. Soc., Wash. 64(4):253-262.*

In the second modification, the wood framework of the trap was abandoned in favor of a more sturdy one of angle iron and aluminum tubing (conduit). To form the corner posts, 5½-foot lengths of 3/16- by 1- by 1-inch angle iron were driven into the ground at about 75-inch intervals to form a square. To these posts, 80-inch lengths of ½-inch thin-walled conduit were attached with ¾-inch U-bolts through pre-drilled holes to form the horizontal cross members of the frame (fig. 2). This framework is slightly heavier than the wood frame, but fewer pieces are required for assembly and this frame is much more durable. Assembly time for wood and metal frames is about the same the first year. In subsequent years, however, the metal framework can be assembled more quickly because wood frames tend to weather and warp during field exposure. When the wooden pieces are reassembled, it is often difficult to get them together properly unless they are distinctly marked while being disassembled. If subsequent years of trapping are anticipated in the area, the metal frames have the added advantage of being able to stand in place through the winter months thus eliminating the need for reassembly each year.

Comparative costs for the wooden and metal frames at time of construction were $13.49 and $15.92, respectively:

	Cost Per unit	Per frame
Metal		
Vertical posts (angle iron)	$0.38/ft	$ 8.36
Horizontal braces (conduit)	.185/ft	4.92
U-bolts with nuts and washers	.32 each	2.56
Dowel rod, ½ inch (conduit pin)	.08/ft	.08
Total		$15.92
Wood		
Vertical posts	.14/ft	4.67
Horizontal braces (upper)	.14/ft	3.57
Horizontal braces (lower)	.14/ft	3.57
Stove bolts, nuts, washers	.07 each	1.68
Total		$13.49

Conduit is purchased in standard 120-inch lengths. After cutting the 80-inch horizontal bars, the remaining 40-inch pieces can be joined at the center by fitting them over a section of ½-inch dowel rod.

Although the original cost of the metal framework is slightly higher, we believe that the relative ease of reassembly and its durability make it the more economical choice, especially in long-term studies where the frames are left in place overwinter.

Figure 2.— Metal framework assembly. Insert shows method of fastening conduit to angle iron posts.

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